Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Improving Public Safety Communications in the 800 MHz Band	)	**WT Docket No. 02-55**
Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels	)	

REPLY COMMENTS

The Association of Public-Safety Communications Officials-International, Inc. (APCO); the International Association of Chiefs of Police (IACP); the International Association of Fire Chiefs, Inc. (IAFC) and International Municipal Signal Association (IMSA); the Major Cities Chiefs Association (MCC); the Major County Sheriffs' Association (MCSA); and the National Sheriffs' Association (NSA) (collectively, Public Safety Organizations); in conjunction with Aeronautical Radio, Inc. (ARINC); the American Mobile Telecommunications Association (AMTA); the American Petroleum Institute (API); Association of American Railroads (AAR); the Forest Industries Telecommunications (FIT); the Industrial Telecommunications Association, Inc. (ITA); the Personal Communications Industry Association (PCIA); and the Taxicab, Limousine and Paratransit Association (TLPA) (collectively, Private Wireless Coalition) and Nextel Communications, Inc. (Nextel) (collectively with the Public Safety Organizations and the Private Wireless Coalition, Joint Commenters) hereby submit these joint Reply Comments in the

Notice of Proposed Rulemaking (NPRM) in the above-referenced proceeding.[1] All of the Joint Commenters have been actively involved in this proceeding to date, and they or their members will be affected by its outcome.

The Joint Commenters represent every type of licensee operating in the 800 MHz band and hereby submit to the Commission a consensus solution to the Commercial Mobile Radio Service (CMRS)—public safety interference problem. Taken together with Nextel, the Joint Commenters or their members hold licenses on over 80% of the impacted spectrum at 800 MHz. These Reply Comments are the result of numerous meetings among the affected parties at 800 MHz since the filing of Nextel's White Paper.[2] The consensus 800 MHz realignment plan ("Consensus Plan") set forth herein represents the interests of all the parties above, while also achieving the objectives sought by the Commission in this proceeding. As demonstrated below, the Joint Commenters believe the Commission should create two blocks of spectrum at 800 MHz: one block for non-cellularized architecture operations and one block for cellular-like architectures.

I. Background

One issue that is not disputed after the initial round of comments in this proceeding is that the public safety—CMRS interference problem is real and detrimental to public safety communications.[3] As noted by Fairfax County in Virginia, interference suffered ranges "from

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[1] *See*, *Improving Public Safety Communications in the 800 MHz Band and Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, Notice of Proposed Rule Making, WT Docket No. 02-55 (rel. Mar. 15, 2002) (NPRM).

[2] *See*, "Promoting Public Safety Communications: Realigning the 800 MHz Land Mobile Radio Band to Rectify Commercial Mobile Radio – Public Safety Interference and Allocate Additional Spectrum to Meet Critical Public Safety Needs," filed by Nextel Communications, Inc, on November 21, 2001 (White Paper).

[3] *See, generally,* Comments of the City of Baltimore, Maryland (Baltimore); Comments of the District of Columbia, Office of the Chief Technology Officer (DC); Comments of Fairfax County,

slight to severe" in several locations throughout the county and may be "occurring in other locations not yet known."[4] The County of Maui, Hawaii, also noted the severity of interference to its public safety communications by claiming that CMRS operations have "victimized" the "sole public safety agency responsible for mission critical communications."[5] Furthermore, the International Association of Fire Chiefs, Inc. and International Municipal Signal Association, Inc. (IAFC/IMSA) state that CMRS – public safety interference is not relegated to any one geographic area, but instead is being experienced throughout the nation with increasing severity.[6] The Commission, itself, recognized "a serious interference problem with public safety in the 800 MHz band that deserves resolution."[7]

Not only do the commenters describe the interference experienced, but also the cost incurred by public safety entities in resolving the interference problem. For example, the City of Portland, Oregon, has spent approximately $500,000 "in remedial expenses to optimize the transmitted output power" of its 800 MHz system due to "pervasive interference problems."[8] As another example, the City of Baltimore has spent $70 million to upgrade its public safety

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Virginia, Department of Information Technology (Fairfax County); Comments of the State of Florida (Florida); Comments of King County, Washington (King County); Comments of the County of Maui, Hawaii (Maui); Comments of the City of Newport News, Virginia (Newport News); Comments of the City of New York (New York City); Comments of the City of Portland (Portland); Comments of the Public Safety Improvement Coalition (PSIC) (including statements from the Cities of Cincinnati, Ohio; Philadelphia, Pennsylvania; Phoenix, Arizona; San Diego, California; Scottsdale, Arizona; and Tucson, Arizona; the District of Columbia; the Counties of Anne Arundel, Maryland; Fauquier, Virginia; Hamilton, Ohio; Osceola, Florida; and San Diego, California; as well as the Denver Greater Metro Telecommunications Consortium).

4 Fairfax County at p. 2.

5 Maui at p. 2.

6 Comments of the International Association of Fire Chiefs, Inc., and International Municipal Signal Association at p. 2 (IAFC/IMSA).

7 NPRM at ¶ 20.

8 Portland at p. 2.

communications at 800 MHz, only to continue experiencing harmful interference.[9] The severity of this interference, as demonstrated by the public safety community, and the costs incurred by public safety entities, and in turn, the public, necessitates a realignment of the Commission's 800 MHz band plan and revision of its interference policies at 800 MHz.

In addition, initial Comments in the proceeding have documented interference to non-public safety wireless systems.[10] Many of these systems include public safety users.[11] Thus, it is clear that the interference problem at 800 MHz can impact every type of user in the band, and is having a devastating impact on those affected.

On November 21, 2001, Nextel offered to the Commission a plan to remedy CMRS - public safety interference at 800 MHz.[12] The plan sought to realign the band into two separate, contiguous blocks of spectrum: 20 MHz for public safety at 806-816/851-861 MHz; and 16 MHz for digital, CMRS networks at 816-824/861-869 MHz. While suggesting 20 MHz for public safety operations, Nextel advocated a 4 MHz guard band at 814-816/859-861 MHz to further protect public safety operations.[13] To assist in defraying the costs of creating these two blocks of contiguous spectrum, Nextel offered up to $500 million to retune the public safety systems in accordance with its White Paper proposal.[14] Noting that $500 million may be insufficient to defray the total relocation costs to public safety, Nextel also suggested that all

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9 Baltimore at p. 1-4.

10 *See generally*, Comments of Harmer Communications at p. 2; Comments of NAM/MRFAC at p. 6-8; Comments of Shulman, Rogers, Gandal, Pordy & Ecker, P.A. (SRGPE); Comments of Skitronics, LLC at p. 3; Comments of Supreme Radio Communications, Inc. at p. 10-12.

11 SRGPE at p. 2-6.

12 White Paper at p. 7.

13 White Paper at p. 33-34.

14 White Paper at p. 40.

CMRS and cellular operators benefiting from the realignment should contribute to public safety's relocation expenses.[15]

To clear the lower portion of the band for public safety operations, the White Paper recommended that Business and Industrial/Land Transportation (B/ILT) licensees and traditional high-site Specialized Mobile Radio (SMR) operators either remain in the 800 MHz band on a secondary, non-interfering basis or relocate at their own cost to 700 MHz or 900 MHz spectrum, where B/ILT and analog SMR uses would be considered co-primary.[16] To provide these entities with relocation spectrum, Nextel offered to return its 700 MHz Guard Band licenses and its 900 MHz SMR licenses to the Commission.[17] Nextel is currently licensed for 4 MHz of spectrum in 40 markets in the 762-764/792-794 MHz band, and a running average of 3.8 MHz of spectrum within the 896-901/935-940 MHz band.[18]

In return for providing its 700 MHz and 900 MHz spectrum, and for contributing approximately 2.5 MHz at 800 MHz to realign non-cellularized systems, Nextel suggested that it be issued a 10 MHz block of spectrum at 2020-2025/2170-2175 MHz (2.1 GHz), which is currently designated as reserve Mobile Satellite Service (MSS) spectrum.[19] To make Nextel whole for the spectrum it relinquished at 700 MHz, 800 MHz and 900 MHz, the 2.1 GHz block

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15 White Paper at p. 39-42 and n. 54. Under its plan, Nextel would also retune its own equipment in the proposed public safety block to the former NPSPAC channels and to replacement spectrum at 2.1 GHz spectrum at its own costs.

16 White Paper at p. 42-43.

17 White Paper at p. 7-8, 29.

18 White Paper at p. 29.

19 White Paper at p. 55-58.

would be reallocated for terrestrial CMRS services and licensed to Nextel on a nationwide basis.[20]

A counter proposal by the Private Wireless Coalition (PWC) sought to remedy public safety interference by moving the entire 800 MHz public safety community to the Upper 700 MHz band (747-762/777-792 MHz) as the desired long-term solution.[21] The 700 MHz solution, however, required four critical pieces of legislation, and continues to require three items from Congress, that may prove unattainable.[22] First, Congress needed to indefinitely delay the auction of the Upper 700 MHz band.[23] Legislation is still required to (1) redesignate the Upper 700 MHz band to public safety (with the exception of the already auctioned Guard Bands); (2) explore alternative funding arrangements for public safety relocation and public safety future operations; and (3) set a date certain by which broadcasters in the Upper 700 MHz band must complete the DTV transition.[24]

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[20] White Paper at p. 55-58. In response to the Commission's subsequent NPRM, Nextel indicated that 10 MHz of paired spectrum at 1910-1915/1990-1995 MHz would be an acceptable alternative to 2.1 GHz.

[21] Comments of the Private Wireless Coalition at p. 7-12 (PWC).

[22] PWC at p. 9-11.

[23] Some Coalition members supported this action in a letter from ARINC, AAR, FIT, ITA, MRFAC, NAM, SBT and UTC to the Honorable Michael K. Powell, Chairman, Federal Communications Commission, on April 16, 2002. The letter asked the Commission to delay the Upper 700 MHz auction so as to consider all options available to public safety in this proceeding. *See also*, Auction of Licenses in the 747-762 and 777-792 MHz Bands (Auction No. 31); Auction of Licenses in the 698-746 MHz Band (Auction No. 44); Cellular Telecommunications & Internet Association; Paxson Communications Corporation and the Spectrum Clearing Alliance; Applications for Review of Wireless Telecommunications Bureau Letter, April 10, 2002, DA 02-857, *Order*, WT Docket No. 99-168, GN Docket No. 01-74 (rel. May 24, 2002). While Congress and the Commission have taken a step to delay the Upper 700 MHz auction, it would be misguided for the Coalition or public safety to take this legislation as a sign that Congress will follow through with every other critical piece of legislation necessary to complete the Upper 700 MHz puzzle that must be finalized for public safety operations to thrive in the band.

[24] PWC at p. 10.

The PWC also suggested an alternative re-banding solution that would allow all parties to remain in the 800 MHz band. Under that plan, public safety would have retuned to 806-811/851-856 MHz, creating contiguous public safety spectrum adjacent to their current 700 MHz allocation.[25] B/ILT and traditional SMR licensees would have retuned, if necessary, to 811-816/856-861 MHz[26] and cellularized SMR licensees would have retuned to 816-824/861-869 MHz.[27] The PWC proposal would not have permitted cellular-like system architecture in the public safety band or the B/ILT and traditional SMR band.[28] Moreover, in the interim, pending Commission adoption of any relocation proposal, the PWC recommended that the Commission codify the *Best Practices Guide* to provide guidance for mitigating CMRS—public safety interference on a case-by-case basis.[29]

II. Discussion

In the NPRM, the Commission states, "[w]e encourage commenting parties to submit any original band restructuring plan … and to discuss how their plans address the following issues: (a) interference elimination; (b) minimum disruption to existing services; and (c) provision of sufficient spectrum for public safety."[30]

In order to provide the Commission with a clear vision of where the affected communities stood on this issue, the Joint Commenters met to attempt to offer the Commission a

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[25] PWC at p. 14-24. In the interim, PWC members have investigated the potential of mobile radio equipment which could span the entire proposed 700 MHz and 800 MHz public safety/private wireless allocation. However, PWC members have been informed that the wide "front-end" required of such radios would not be conducive to the resolution of interference and would not be achievable in a reasonably-sized unit.

[26] PWC at p. 15.

[27] PWC at p. 16-17.

[28] PWC at p. 15.

[29] PWC at p. 12. *See also, generally*, *Avoiding Interference Between Public Safety Wireless Communications Systems and Commercial Wireless Communications Systems at 800 MHz—A Best Practices Guide*, December 2000 (Best Practices).

single voice of 800 MHz licensees that speaks directly to the objectives sought in this proceeding. As a result, the Joint Commenters reached the Consensus Plan detailed below.[31] *As discussed in Section II.B, this plan meets the Commission's objectives in this proceeding, while also recognizing the interests of existing licensees in the band*.

A. The Consensus Plan

The cities of Austin, Bryan and College Station, Texas, note, "the predominant root cause of the interference problem is the … mix of cellular architecture CMRS systems with the traditional noise-limited systems typically used by public safety and most business and industrial/land transportation users of 800 MHz."[32] The State of Maryland determined that the introduction of digital, cellular architecture in the band triggered significant harmful interference for public safety entities.[33] The Commonwealth of Virginia also points to the contrasting system design between public safety systems and cellular architecture as a cause of the interference problem at 800 MHz.[34]

1. The Commission Should Establish Two Separate Contiguous Spectrum Blocks at 800 MHz To Separate Non-Cellular and Cellularized Systems

The Joint Commenters concur with the public safety entities above, and believe separation of cellular-like architecture in the band from non-cellularized operating systems would relieve a substantial portion of interference experienced by public safety and other incumbent licensees. To this end, the Joint Commenters urge the Commission to create two

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30 NPRM at ¶ 26.

31 A bandplan chart for the Consensus Plan has been attached in Appendix A.

32 Comments of the City of Austin, Texas, at p. 1 (Austin). Comments of the Cities of College Station, Texas, and Bryan, Texas, at p. 1 (Bryan/College Station).

33 Comments of the State of Maryland, Department of Budget and Management, Office of Information Technology, (Maryland) at p. 1.

34 Comments of the Commonwealth of Virginia, Department of Information Technology, at p. 3.

blocks of contiguous spectrum in the 800 MHz band: one block for non-cellularized (high-site, high-power) system architecture at 806-816/851-861 MHz and one block for cellular-like (low-site, low-power) system architecture at 816-824/861-869 MHz. Eligibility in the non-cellularized block will be limited to public safety, B/ILT and SMR licensees operating with a non-cellular system architecture. This is intended to avoid replication of the current interference environment.

Within the non-cellularized block, the Joint Commenters recommend that the 2 X 2 MHz block (814-816/859-861 MHz) immediately adjacent to the first cellularized channel be used as a guard band for further protection of public safety systems from interference resulting from cellularized operations.[35] One group of potential licensees in this 4 MHz of spectrum would include "campus-type" systems or other interference-resistant B/ILT or non-cellular SMR systems.[36] As the PWC noted in its initial Comments, "campus systems tend to be more immune to interference from cellular system architectures because they can better control their operating environment, making them the 'best neighbor' to cellularized systems."[37] Licensees, with the exception of those public safety licensees seeking lower channels, who are currently operating in this band will continue operations in accordance with the parameters of their license.

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[35] To the extent possible, it would be prudent to retune "campus-like" systems into the guard band and wide-area systems out of the guard band at 814-816/859-861 MHz. *See* PWC at p. 11-12. The final bandplan, however, should place other B/ILT and/or traditional SMR licensees in the guard band if it is necessary to complete relocation due to a minimal amount of greenspace in a given NPSPAC Regional Planning Area (Region) (47 C.F.R. § 90.16); or if it would otherwise provide access to additional public safety spectrum in the lower portion of the non-cellularized block. Greenspace would be defined as an open channel in a given area resulting from the relocation of Nextel or another entity out of the non-cellularized block at 800 MHz.

[36] Like the PWC proposal, campus systems under the compromise proposal will be "defined by an operating area with a five mile radius or less, and further characterizations of campus systems, such as antenna height and ERP limitation, can be developed by … [a] designated coordination committee." *See,* PWC at p. 21.

[37] PWC Comments at p. 20-21.

Furthermore, systems other than "campus-type" systems will be located in the guard band, as necessary.[38]

Under this Consensus Plan, the definition of cellular system architecture is identical to that contained in the PWC Comments, which was taken from the Commission's *Second Report and Order* in the 700 MHz Guard Band proceeding.[39] In that Order, the FCC determined that a cellular-like system architecture is one in which "large geographic service areas are segmented into many smaller areas or cells, each of which uses its own base station, to enable frequencies to be reused at relatively short distances."[40] Specifically, systems with all of the following characteristics would be prohibited in the non-cellularized band: (1) more than 5 overlapping, interactive sites featuring hand-off capability; (2) sites with antenna heights of less than 100 feet above ground level on HAATs of less than 500 feet; *and* (3) sites with more than 20 paired frequencies.[41]

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[38] As discussed further, however, licensees remaining in the 814-816/859-861 MHz guard band will have a greater likelihood of interference from CMRS operations. Accordingly, mission-critical, life-safety and other particularly interference-sensitive operations should be relocated to other channels in the 809-814/854-859 MHz channel block.

[39] PWC at p. 8. *See also*, Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *Second Report and Order* (rel. Mar. 9, 2000) at ¶ 14 and n. 34.

[40] PWC at p. 15. *See also,* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *Second Report and Order* (rel. Mar. 9, 2000) at ¶ 14 and n. 34.

[41] It is conceivable that in the future some licensees in the non-cellularized band may seek to deploy new technologies employing a cellular-like system architecture. Such requests should be addressed through the Commission's rule waiver process. Consistent with the Commission's rules and precedent, the applicant would have to demonstrate that the waiver to introduce cellular-like architecture in the non-cellular block would not contravene the underlying purpose of the non-cellular prohibition for this block; *i.e.* that it would not create interference to incumbents and that approval of the waiver would promote the public interest. Given the serious threat that interference presents to life-safety communications, any waiver applicant should be required to demonstrate conclusively that its proposed system architecture will not recreate interference problems for public safety communications systems, including through pre-application coordination with public safety frequency coordinators and licensees in the contemplated area of operation. Any authorization which may be granted should be subject to the strict obligation to eliminate interference should it occur, including termination of operation (*accord*, 47 C.F.R. § 80.215(h)).

The cellularized block will consist of the current Upper 200 SMR channels (816-821/861-866 MHz) and the former NPSPAC block. Licensees currently operating in the non-cellularized block using a cellular, low-site architecture may move up to the cellularized block in exchange for their existing authorizations.[42]

2. NPSPAC/General Category Movement—Timing and Logistics

To separate the two types of incompatible system architectures, NPSPAC licensees, currently operating in the 821-824/866-869 MHz band between Nextel and cellular carriers, must move down the band into the non-cellularized block.[43] This 3 X 3 MHz block, currently designed for NPSPAC operations, will move to an equivalent block of spectrum in the current General Category pool at 806-809/851-854 MHz on a channel-for-channel basis. Incumbent public safety, B/ILT, and traditional SMR licensees in the non-cellularized block at 809–816/854–861 MHz should not be "required" to move.

The NPSPAC channels were subject to extensive regional planning and complex channel "packing" to maximize spectrum efficiency and to satisfy the unique spectrum needs of various public safety users in each Region. Any move of NPSPAC channels to another portion of the 800 MHz band must maintain the existing Regional Plans and relative channel assignments to the maximum extent possible. That can only be accomplished by "mapping down" the channel assignments to an equivalent block of spectrum. Under the Consensus Plan, 821-824/866-869 MHz channel assignments would be replaced with equivalent assignments by moving "down" 15 MHz to the 806-809/851-854 MHz block. This particular block of spectrum has the additional

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[42] Modifications to the Consensus Plan may be appropriate within the specific geographic areas in which both Nextel and Southern Company have low-site CMRS systems.

[43] There are a small number of non-Nextel EA licensees in the Upper 200 800 MHz channels.

advantage of being contiguous to the 764-776/794-806 MHz spectrum that has already been allocated for public safety pursuant to the Balanced Budget Act of 1997.

To accommodate movement of the NPSPAC Regional Plans, relocation will occur as follows:

First, any public safety licensee currently operating in the 806-809/851-854 MHz block or the 814-816/859-861 MHz guard band will swap on a one-for-one basis with a Nextel channel in the 809-814/854-859 MHz block. Public safety licensees in the 814-816/859-861 MHz guard band who are concerned about potential interference from the cellularized block may choose to relocate to the 809-814/854-859 MHz portion of the band in order to further remove themselves from cellular system architectures.[44] In the event that a public safety entity remains in the 814-816/859-861 MHz guard band, it should be cognizant of the lack of spectral separation from cellularized systems and further recognize that the only response to future interference will be through case-by-case resolution. It would be recommended that daily, critical public safety communications that must be immediately available in the 814-816/859-861 MHz band either (1) relocate to the 809-814/854-859 MHz portion of the band or (2) rearrange channel usage within a system, if possible, so as to place less critical public safety frequencies closer to cellularized systems.

Second, any non-Nextel site-licensed B/ILT and SMR licensees operating within the 806-809/851-854 MHz band will relocate on a one-for-one basis to spectrum in the following

[44] Public safety licensees in the 859-861 MHz portion of the band desiring to relocate would be accommodated within existing 800 MHz public safety pool spectrum if available, but otherwise in channels vacated by Nextel. In either case, such public safety licensees would be eligible for funding pursuant to the provisions discussed below regarding relocation of NPSPAC channels.

sequence, based upon availability, and with an assurance of spectrum neutrality; that is, they would lose neither channels nor capacity in the process:[45]

1) To channels in the 814-816/859-861 MHz guard band that have been vacated by public safety;

2) To channels in the 814-816/859-861 MHz guard band that have been vacated by Nextel;

3) To channels in the 809-814/854-859 MHz band that have been vacated by Nextel.[46]

Third, the final group of licensees to move out of the 806-809/851-854 MHz band will be non-Nextel EA licensees. When being retuned, EA licensees will get new frequency assignments equal to the amount of spectrum they have both under existing site licenses and the white space benefit in their current EA license. EA licensees on channels 1-120 in the General Category pool will get equivalent blocks of Lower 80 EA licenses that are vacated by Nextel to the extent available; they may also be retuned to equivalent EA licenses on channels 125 – 150 vacated by Nextel, as available.

Non-Nextel EA licensee retuning will occur after the first construction deadline for General Category EA licenses (earliest date 12/20/2003). Spectrum held by public safety licensees subject to overlay new EA licenses will be exempt for five years from defaulting to the non-public safety EA licensee; *i.e.,* in the event a public safety licensee submits its license to the Commission for cancellation or is cancelled due to deconstruction within the 5 year period, only

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[45] Some systems require separation between co-located channels for optimal operation; others are designed to take advantage of the flexibility of contiguous channels. These individual considerations will not be adversely impacted in the band realignment process.

[46] As will be discussed *infra*. in Section II(A)(6), B/ILT and traditional SMR licensees in the 800 MHz band will have the option to voluntarily relocate to 900 MHz for additional spectrum. Voluntary relocation could create additional greenspace for relocation at 800 MHz and ultimately for use by public safety communications systems.

another public safety eligible may apply for that license during the remainder of that period. EA licensees will be entitled to spectrum abandoned by non-public safety licensees within the given EA block at any time after rebanding commences.

Completion of these first three steps will result in Nextel temporarily occupying 100% of the 806-809/851-854 MHz band in preparation for the relocation of the NPSPAC channels. Putting Nextel temporarily into this spectrum will facilitate the relocation of NPSPAC licensees by enabling NPSPAC licensees and Regional Planning Committees (RPCs) to work with a single 806-809/851-854 MHz incumbent instead of the mix of Nextel, public safety, B/ILT and high-site SMRs currently holding licenses on these channels.

Fourth, NPSPAC licensees will relocate from the 821-824/866-869 MHz block to the 806-809/851-854 MHz block on a system-by-system basis by swapping frequencies with Nextel. NPSPAC will maintain the same relative channel allotments within each Region. When a NPSPAC system is ready for relocation, Nextel will vacate the associated channels in the 806-809/851-854 MHz block. Under this plan, retuning of public safety incumbents would occur by NPSPAC Region.[47] Furthermore, retuning would be prioritized so that those Regions with the highest incidence of acute interference would be retuned first. The next retuning priority would be the most populous Regions, as agreed upon by Nextel and Public Safety Organizations. Nextel would receive on a Region-by-Region basis a 6 MHz license for the current NPSPAC channels at 821-824/866-869 MHz as each Region is cleared.

[47] 47 C.F.R. 90.16.

The Commission should adopt rules implementing the revised band plan to provide that any mandated relocation of NPSPAC (or other public safety) systems will be without disruption to critical public safety radio communications operations. Relevant public safety licensees must be allowed to approve any relocation plan impacting their licensed system to ensure continuous operation, equivalent functionality, coverage, and reliability.[48] Furthermore, as discussed below, a public safety licensee's obligation to relocate shall be contingent upon all relocation expenses being covered by Nextel or another third party.[49]

Fifth, upon completion of the relocation of all NPSPAC systems, Nextel will clear itself from any remaining channels in the 809-816/854-861 MHz block.

Until retuning occurs in a Region, all incumbent licensees retain their existing licensed authority; *i.e.*, the status quo. Moreover, Nextel and other CMRS licensees would continue to mitigate any incidence of CMRS—public safety interference on a case-by-case basis with the cooperation of the affected public safety licensee throughout the retuning process and thereafter.

3. Treatment of Additional Vacant Spectrum

After the completion of the relocation process in a given Region, any remaining Nextel-vacated spectrum in the non-cellularized block will be available exclusively for public safety use for five years.[50] After this five-year period, any channel unclaimed by public safety will become

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[48] The Consensus Parties will hold a series of meetings to bring together public safety operational experts to develop step-by-step plans to retune, without significant operational disruption, a number of sample real-world public safety communications systems.

[49] *See infra.* at Section II(A)(8).

[50] Business and industrial pool channels which are vacant today and available for use by business and industrial pool eligibles should remain available for these applicants. The only business and industrial pool frequencies which will be available strictly to public safety eligibles for five years are those frequencies and at those locations where Nextel has vacated a channel or a B/ILT entity voluntarily

available for B/ILT and high-site SMR eligibles, as well as public safety entities. Moving forward, therefore, eligibility for Nextel-vacated authorizations in the non-cellularized block will be limited to public safety applicants *only* for the first five years following the NPSPAC relocation in a given Region. Thereafter, eligibility for Nextel-vacated channels shall include B/ILT and traditional SMR applicants, provided they deploy non-cellular, high-site architecture systems.

Preliminary analysis taken from 66 markets indicates that rebanding would, in almost every case, create additional spectrum for public safety entities at 800 MHz.[51] For example, in the Los Angeles market approximately 9 channels should become available in channels 121-400; New York, approximately 18 channels; Chicago, approximately 95 channels; Philadelphia, approximately 42 channels; the District of Columbia, approximately 29 channels.

4. Mexican/Canadian Border Regions

The existing proportionate U.S. land mobile radio channel allocations in the U.S. – Mexico and U.S. – Canada Border Areas, respectively, will be maintained in this realignment. The Joint Commenters recognize the need for a complete bandplan including a detailed spectrum re-alignment plan in the Mexican and Canadian border regions. The Joint Commenters will provide the Commission with this information in a subsequent filing.

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relocates to 900 MHz. Frequency coordinators and the Commission's licensing staff will need to adopt appropriate procedures to implement this provision.

[51] In only 3 markets out of 66 did the analysis demonstrate a lack of additional public safety spectrum. See Appendix B attached to this filing. In these cases, it will be incumbent upon Nextel to provide the relocated entities with the amount of spectrum necessary to complete NPSPAC relocation.

5. Implementation Coordination

Implementation of such a plan will require coordination among the affected parties. As noted above, all NPSPAC licensees will be relocated to the 806-809/851-854 MHz band on a Region-by-Region basis, and any additional planning necessary to implement the relocation should be coordinated by the relevant 800 MHz Regional Planning Committee. However, those currently operating in the General Category pool that will be relocated for the movement of the NPSPAC band will require a comprehensive bandplan for relocation. Thus, the FCC should direct Nextel, the Land Mobile Communications Council (LMCC), including the relevant public safety coordinators, and as necessary, the RPCs, to come up with such a bandplan.

While many different types of users exist in the band, the LMCC and RPCs represent virtually every licensee that will be required to move as a result of this plan. The Joint Commenters, therefore, urge the Commission to direct Nextel, the LMCC, and the RPCs to work together to complete, by a date certain, a comprehensive bandplan for the new public safety/business/industrial land transportation pool, and the reallocated 700 MHz and 900 MHz channels, as described below. After the groups finalize a bandplan, a formal plan should be submitted to the Commission for approval. The groups should then effectuate implementation of the plan, as supported by the Commission.

6. Return of 700 MHz, 800 MHz and 900 MHz Spectrum by Nextel

According to Appendix A in Nextel's Comments, it holds a "running average" of 18.5 MHz of spectrum in the 800 MHz band, approximately 4 MHz of spectrum in the 900 MHz band and 4 MHz of spectrum in 40 markets in the 700 MHz band.[52] ITA and PCIA, after examining

[52] Comments of Nextel Communications, Inc., Appendix A—Calculation of Running Averages. The appendix describes Nextel's methodology for calculating the "running average."

the physical systems and intellectual methodologies used to create this data, have verified the information supplied by Nextel and find it to be accurate.

To further promote public safety communications, Nextel will return its 700 MHz and 900 MHz allocations to the Commission, while also contributing 2.5 MHz of spectrum at 800 MHz for realigning non-cellularized systems. Nextel's 700 MHz Guard Band holdings will be re-designated for public safety use, and its 900 MHz SMR channels will be re-designated for B/ILT and traditional SMR use. While the 700 MHz band will be used solely for public safety operations, the 900 MHz band will be used as an incentive for licensees in the 800 MHz band to relocate to 900 MHz; thus, offering more spectrum at 800 MHz to public safety licensees. To achieve this objective, the Joint Commenters suggest that if a B/ILT or non-cellularized SMR incumbent in 806-816/851-861 MHz wishes to voluntarily relocate to 900 MHz during the retuning of its NPSPAC Region it should receive a 50 kHz assignment for each 800 MHz 25 kHz channel it voluntarily vacates.[53] This incentive could clear more spectrum at 800 MHz for public safety operations in the five years following the NPSPAC relocation in a given Region, again creating additional public safety spectrum to meet their critical communication needs.[54]

7. Everyone Must Be Made Whole

To satisfy the public interest using the industry-wide Consensus Plan, Nextel would lose approximately 10.5 MHz of spectrum: 4 MHz in 40 markets at 700 MHz, 2.5 MHz at 800 MHz and approximately 4 MHz at 900 MHz. Nextel must be made whole through an alternative

[53] The opportunity to gain additional spectrum at 900 MHz will only be extended during the retuning process; that is, no B/ILT or non-cellularized SMR incumbent may double their spectrum after the completion of the NPSPAC retuning process in its Region.

[54] APCO at p. 11-19; Florida at p. 3-5; IAFC/IMSA at p. 9; Comments of the State of New York Office for Technology, Statewide Wireless Network Project at p. 12-13; and PSWN at p. 8.

spectrum allocation of 10 MHz at 1910-1915/1990-1995 MHz. While this spectrum has been designated for UPCS and MSS applications, no equipment has been certified as of yet in the UPCS band (1910-1915 MHz) that the Commission proposed for consideration and the 1990-1995 MHz band is currently waiting for future development of an MSS licensee. The Joint Commenters believe that the public interest benefit of re-designating this spectrum to Nextel will outweigh the perceived, potential drawbacks for UPCS and MSS users in the 1910-1915/1990-1995 MHz bands.

8. Funding

As noted earlier, interference experienced by public safety entities in the 800 MHz band is real, and growing in severity. Moreover, public safety commenters have made clear that they should not be required to fund any relocation mandated by the Commission.[55] The Joint Commenters agree. Similarly, incumbent licensees, including public safety, B/ILT and traditional SMR, should not bear the burden of relocation costs caused by the introduction of incompatible system architectures in the 800 MHz band.[56] Importantly, interference is not being experienced solely from Nextel systems, but also from the cellular carriers, even though such

[55] Comments of the State of Arizona, Department of Public Safety at p. 4; Comments of Association of Public-Safety Communications Officials-International, National Association of Counties, National League of Cities, National Association of Telecommunications Officers and Advisors (APCO) at p. 18-22; Baltimore at p. 2; Comments of Bergen County Police Department at p. 6-7; Comments of Dallas Area Rapid Transit at p. 2; Fairfax County at p. 3; Florida at p. 5-6; Comments of the Forestry Conservation Communications Association at p. 3; Comments of the State of Hawaii at p. 1; Comments of the International Association of Chiefs of Police, Major Cities Chiefs Association, National Sheriffs' Association, Major Counties Sheriffs' Association at p. 8-9; Comments of the International Association of Fire Chiefs, Inc. and International Municipal Signal Association (IAFC/IMSA) at p. 4; King County at p. 2; Comments of Madison County East Transit District at p. 7; Maui at p. 5-9; Newport News at p. 1; PSIC at p. 3; Comments of the Public Safety Wireless Network Program (PSWN) at p. 12-13; Comments of New Jersey Transit at p. 2; New York City at p. 2-3; and Comments of the Utah Communications Agency Network at p. 3-4.

[56] While the parties have no formal plan at this time, Nextel and the private wireless community are currently discussing funding issues with respect to private wireless relocation.

licensees are also operating within the parameters of their FCC-certified licenses. Nor is interference experienced solely by public safety users. "Public safety equipment is almost identical to B/ILT equipment, and results in the same kinds of interference for B/ILT users."[57]

Sources of funding will include, but should not be limited to, Nextel's pledge of $500 million.[58] Nextel will escrow, or otherwise guaranty, a $500 million fund for public safety conversion costs. No public safety agency is required to move unless both of the following conditions have been met: (1) all costs for the conversion are covered by a third party; and (2) if a NPSPAC system, conversion is assured for all NPSPAC public safety licensees in the Region,[59] and all 806-809/851-854 MHz channels in that Region are vacated by Nextel and made part of the relevant Regional Plan in place of 821-824/866-869 MHz channels, which in turn will be licensed to Nextel. Costs of the relocation of non-NPSPAC, public safety licensees in the 814-816/859-861 MHz guard band to the greenspace in the 809-814/854-859 MHz band will also be covered.

No retuning for a Region will occur unless funding is available. If Nextel is the sole funding source and the $500 million is exhausted before the completion of retuning in every Region, Nextel has complete discretion as to whether to provide additional funding. This approach creates incentives for both public safety and Nextel to continue to seek additional funding.

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57 *See* PWC at p. 11 and n. 32

58 State and local governments will not be required to provide such funding.

59 47 C.F.R. 90.16.

The Public Safety Organizations and Nextel will work together to establish guidelines identifying eligible expenditures for relocating incumbent public safety licensees. To quality for reimbursement, a public safety entity will adhere to the following principles: (1) all equipment that can be retuned must be retuned, rather than replaced; (2) provide the Public Safety Organizations and Nextel with the actual costs of retuning, whether performed by the public safety entity itself, a public safety contractor or Nextel; and (3) purchase, if necessary, the same or equivalent equipment; equipment or system enhancements are at the expense of the public safety entity. In the event that voluntary negotiations fail, the Commission will be needed to arbitrate or adjudicate the matter.[60]

B. The Consensus Plan Achieves the Commission's Objectives for this Proceeding

As mentioned earlier, the Commission is seeking to satisfy three primary objectives through alternative bandplan proposals:

- Interference elimination;
- Minimal disruption to existing services; and
- Provision of sufficient spectrum for public safety.[61]

1. "Interference Elimination"

By separating cellularized operations from non-cellularized systems, interference will be mitigated in the vast majority of cases in the 800 MHz band. As noted in Nextel's Comments at Appendix A, relocating NPSPAC licensees below 809/854 MHz will significantly lower the probability that intermodulation products, both from CMRS systems between 816-821/861-866 MHz and from cellular carriers above 824/869 MHz, will cause interference to public safety

[60] The Public Safety Organizations and Nextel continue to discuss more specific details of the funding process, which must be resolved for the Consensus Plan to proceed. *See* Nextel's Reply Comments for some additional details on the funding process.

[61] NPRM at ¶ 26.

radio systems.[62] Furthermore, by removing Nextel's operations from the interleaved frequencies and creating a contiguous block of spectrum for Nextel, intermodulation products will be reduced because Nextel can better manage its system to operate with a narrower span of frequencies at any given site.[63]

The Consensus Plan will also provide equipment manufacturers with the opportunity to "design front end filters that cover a smaller range of spectrum" for public safety licensees.[64] Alternatively, without narrowing the filter, manufacturers could shift the center frequency of the filters towards the lower end of the 800 MHz band, so as to begin degradation of an incoming signal as soon as possible at the end of the non-cellularized block (816/861 MHz). By combining improved receiver design with a contiguous block of spectrum for public safety at 806-809/851-854 MHz, involvement by cellular-A carriers and Nextel transmitters in the upper part of the SMR band should be significantly reduced.[65]

Despite the giant strides this proposal takes towards mitigation of interference for public safety and other 800 MHz licensees, it will still be necessary for the Commission to codify, and to the extent necessary revise, the *Best Practices Guide*. This will include the obligations of interfering parties to correct such interference. Codifying *Best Practices* solutions and clearly defining responsibility for fixing interference are essential for two reasons: (1) implementing

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62 Nextel Comments at Appendix A, p. 2. The LMCC and RPCs should recognize in their bandplan that relocated public safety entities from the General Category pool should remain as close as possible to the "new" NPSPAC block and as far away as possible from cellular system architectures.

63 Nextel Comments at Appendix A, p. 3.

64 Nextel Comments at Appendix A, p. 6.

65 Nextel Comments at Appendix A, p. 6. *See also, generally,* Comments of Association of American Railroads at p. 3-4; Austin at p. 1; Comments of Boeing at p. 19-21; Bryan/College Station at p. 1; DC at p. 10; Comments of M/A—Com, Inc. at p. 7; PWC Comments at p. 14-15; Comments of Qualcomm, Inc. at p. 4; Comments of the Telecommunications Industry Association at p. 3-4; *See also,* Letter from National Association of Manufacturers to Chairman Michael K. Powell dated December 21, 2001.

this or any other band plan will take time, and problems must be addressed in the interim; and (2) there will continue to be the potential for interference after the band shift is completed, and the band plan will not absolve anybody of their obligation to immediately "fix" the interference problem.

Interference resolution procedures will be necessary regardless of the relocation plan, if any, selected by the Commission. The fact remains that public safety licensees will continue to be subject to potential interference during any transition, whether that transition be to the lower portion of the 800 MHz band, the Upper 700 MHz band or any other location. To illustrate, if the Commission were to select a 700 MHz plan, codification of the *Best Practices* solutions would be essential since relocation would not take place until 2007, or most likely later, leaving public safety licensees in interference "hotbeds" between cellularized licensees for an indeterminate period of time. By mandating the *Best Practices* solutions, the Commission will also be offering the interfering party specific suggestions on how to solve the problem in a timely manner. In the interest of complete protection to incumbent operations, the Commission should, therefore, codify the need for case-by-case cooperation in instances of interference.

The Joint Commenters believe that interference will be significantly reduced through rebanding and thoughtful planning—satisfying the Commission's first objective of this proceeding.[66]

[66] As mentioned above, interference could be even further eliminated through new equipment design that limits the front-end receiver of a public safety radio solely to the non-cellularized block of spectrum.

2. "Minimum Disruption to Existing Services"

The Consensus Plan also meets the second objective of the proceeding. With the exception of Nextel licenses below 816/861 MHz, licensees in the 809-821/854-866 MHz band should not be disrupted at all. The only groups that will be required to relocate under the Consensus Plan will be NPSPAC licensees and those licensees currently operating in the 3 X 3 MHz block in the General Category pool that will be re-designated as the "new" NPSPAC block.

The number of licensees and retuning costs of moving under the Consensus Plan will be considerably less than the relocation of any group of licensees in the 800 MHz band to alternative spectrum outside the band. For example, the mandatory eviction of all public safety licensees (and/or private wireless licensees) to the Upper 700 MHz band would trigger the movement of many more licensees than a NPSPAC/General Category retuning process and would require the purchase of all new base station and mobile/portable equipment as 800 MHz equipment cannot be retuned to 700 MHz.[67] Furthermore, the movement of only two 3 X 3 MHz blocks is more administratively feasible than the relocation of multiple groups or licensees in vastly different parts of the band. With this in mind, the Consensus Plan allows the Commission to minimize the disruption of existing services.[68]

Further, by minimizing the number of public safety and private wireless licensees which must relocate, and by ensuring that all incumbent licensees remain within 800 MHz (thus maintaining equipment compatibility), the plan is the most cost-efficient re-banding plan offered to date. This minimizes the difficulty of identifying sources of funding for the relocation.

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[67] In contrast, most existing 800 MHz equipment can be re-tuned to operate anywhere within the 800 MHz band.

[68] It also warrants noting that virtually every group of existing licensee in the 800 MHz band is a signatory, or affiliated in some manner with a signatory, to this compromise proposal.

3. "Provision of Sufficient Spectrum for Public Safety"

Public safety will gain access to vacated Nextel channels for five years following the NPSPAC relocation, and could acquire additional channels if 800 MHz B/ILT and traditional SMR licensees voluntarily move to 900 MHz. In addition, public safety gains access to 4 MHz of spectrum in 40 markets at 700 MHz.[69] Simply put, the Consensus Plan offers additional public safety spectrum consistent with the public interest to support life-safety communications services. While this additional spectrum will help public safety entities at 800 MHz gain access to additional channels, it will not completely satisfy public safety's spectrum needs. Additional public safety spectrum needs are addressed in Section III of this filing.

4. Other Benefits of the Consensus Plan

In addition to meeting the Commission's objectives, the Consensus Plan also provides the Commission with a solution that can be implemented in a timely manner. The Joint Commenters believe the relocation efforts could be completed no later than three years after publication of the Commission's Order in the Federal Register. While this is an aggressive approach, we believe it is achievable, and more importantly, necessary. Public safety is currently suffering from interference. This is unacceptable. The Joint Commenters have provided the Commission with a proposal that will mitigate the interference suffered by public safety much faster than other proposals before the Commission.

[69] Public safety use of the 700 MHz Guard Band spectrum will, of course, be subject to TV station incumbency and will be limited by interference potential from adjacent 700 MHz CMRS operations, absent a legislative change to the 700 MHz allocations.

In short, the compromise plan could mitigate the interference problem with the least possible disruption to existing services, while offering additional public safety spectrum based on current market need; offering additional B/ILT and traditional SMR spectrum if public safety does not acquire all vacated channels in the 800 MHz band; and *addressing the immediate needs of all affected parties in the 800 MHz band*.

III. Additional Public Safety Spectrum Needs

Many public safety commenters mentioned that additional spectrum for public safety services should be an objective of the Commission in this proceeding.[70] As noted by IAFC/IMSA, "[t]o the extent the resolution of the CMRS-to-public safety interference problem provides an opportunity to increase the spectrum available to public safety services, that opportunity should be seized upon by the Commission."[71]

IAFC/IMSA further state, "resolution of the interference problems and satisfaction of the public safety needs for additional spectrum must be treated as separate objectives."[72] In this respect, the Joint Commenters have offered the Commission the best of both worlds. Public safety's spectrum needs are addressed and interference is significantly mitigated through the Consensus Plan. While the Joint Commenters have offered the Commission the opportunity to allocate additional public safety spectrum through the Consensus Plan, we also ask the Commission to recognize yet another opportunity to allocate spectrum to public safety for mission-critical services. While this spectrum allocation would require legislation, the Joint

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[70] APCO at p. 11-19; Florida at p. 3-5; IAFC/IMSA at p. 9; Comments of the State of New York Office for Technology, Statewide Wireless Network Project at p. 12-13; and PSWN at p. 8.

[71] IAFC/IMSA at p. 9.

[72] IAFC/IMSA Comments at p. 9.

Commenters urge the Commission to allocate additional spectrum for public safety in the Upper 700 MHz band, if given statutory authority to do so.[73]

As noted above, the Joint Commenters recognize the need for additional public safety spectrum and, through the Consensus Plan, seek to provide additional spectrum for public safety at 700 MHz and 800 MHz. While the Consensus Plan provides some additional public safety spectrum, it will not satisfy future spectrum requirements. Therefore, legislative efforts are also necessary to provide a date-certain for nationwide public safety access to 700 MHz band spectrum already allocated to public safety and to additional Upper 700 MHz spectrum to accommodate a broad scope of federal, state, and local public safety and homeland security activities.

IV. Conclusion

The Commission's task in this proceeding is no small one, as the entity whose goal in this proceeding is to protect our public safety radio systems and supply them with the tools necessary to survive future crises, without disrupting existing services. With this in mind, the Joint Commenters are pleased to provide the Commission with a consensus solution to the CMRS—public safety interference problem at 800 MHz that has been endorsed by the three categories of licensees operating in the band: the public safety community, private wireless licensees and Nextel.

After months of deliberation among all affected parties, we believe the Commission can mitigate the current CMRS—public safety interference problem by separating the public safety,

[73] The Upper 700 MHz band includes 30 MHz of spectrum at 747-762/777-792 MHz. The Commission should note, however, that services could not be provided unless and until the incumbent broadcasters convert to their digital assignments, which will most likely take longer than 5 years from today.

B/ILT and traditional SMR systems operating without a cellularized architecture from systems employing a cellular-like architecture in the 800 MHz band. This Consensus Plan offers the Commission a way to achieve its objectives by mitigating interference to public safety (and other incumbent) systems; minimizing the disruption to existing services; and supplying public safety with additional spectrum; while further providing a timely transition; and requiring a minimal amount of congressional action, if any. Due to the urgent need for relief for many public safety systems, the Joint Commenters suggest that the Commission expeditiously adopt the Consensus Plan as its solution to remedying the CMRS—public safety interference problem.

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Appendix A — Consensus Plan